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Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2017				

PHA213 – Pharmacology 2	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
<p>The examination has 2 (A and B) Sections:</p> <p>Section A contains Forty (40) Multiple Choice Questions. Answer ALL questions in the Faculty/School supplied Multiple Choice Answer Sheet. Total marks allocated: Twenty (20). Suggested time allocation: One (1) hour.</p> <p>Section B contains Ten (10) Extended-Answer Questions. Answer any Eight (8) questions only in the 20-page Booklet provided. Total marks allocated: Eighty (80). Suggested time allocation: Two (2) hours.</p>		
EXAM CONDITIONS		
<p><u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.</p>		
This is a CLOSED BOOK examination		
No calculators are permitted		
No handwritten notes are permitted		
No dictionaries are permitted		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 20 Page Book 1 x Scrap Paper Faculty/School Multiple Choice Answer Sheet	

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DOUBLE-SIDED.**

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LEFT BLANK.**

Section A
Multiple Choice Questions
Total No of Marks for this section: 20

Write the answers for this section on the Faculty/School Multiple Choice Answer Sheet provided.
Please ensure that you write your name and student number on the Answer Sheet.

Answer ALL (40) questions.

0.5 mark for each question. Suggested time allocation for Section A: 60 mins

End of Section A

Sections B
Extended Answer Questions
Total No. of Marks for these Sections: 80

Answer this section in the 20-page Answer Booklet provided.
Please ensure that you write your name and student number on the Answer Booklet.

Answer ANY EIGHT (8) of the TEN (10) questions only.

Marks for each section are indicated. Suggested time allocation: 120 mins

Question 1

Describe the mechanisms of action of the following agents in lowering the blood sugar level.

- | | | |
|---|---------------|-----------|
| a | Glimepiride | (3 marks) |
| b | Insulin | (2 marks) |
| c | Alogliptin | (3 marks) |
| d | Empagliflozin | (2 marks) |

Question 2 (multiple topics)

Describe the mechanism of action of the following antibacterial or cancer chemotherapeutic agents. Identification of their therapeutic applications is not required. For part b, explain the benefit of using this combined preparation.

- | | | |
|---|----------------------------------|-----------|
| a | Doxycycline | (2 marks) |
| b | Ticarcillin with clavulanic acid | (4 marks) |
| c | Cisplatin | (2 marks) |
| d | Docetaxel | (2 marks) |

Question 3

The following agents are used in the treatment of osteoporosis. Describe their mechanisms of action.

- a Raloxifene (3 marks)
- b Pamidronate (3 marks)
- c Calcium citrate plus cholecalciferol (Vitamin D₃) (4 marks)

Question 4

- a Describe the endogenous metabolic processes of paracetamol and use these to explain why the centrilobular region of the liver, which is high in CYP2E1 and low in glutathione (GSH), is more sensitive to the hepatotoxic effect of paracetamol overdose.

(Note: Drawing of molecular structures for paracetamol and metabolites is not required and a flow diagram without any explanatory note is **NOT** a valid answer.)

(6 marks)

- b Name **TWO** (2) agents which can be used as antidotes for resolving paracetamol overdose/toxicity and briefly describe their mechanisms of action.

(4 marks)

Question 5

Describe the mechanisms of action of the following psychotropic agents. Include in your answer, identify which mental health disorders they are indicated for, how they benefit the consumers, and any precautions applied.

- a Aripiprazole (4 marks)
- b Moclobemide (4 marks)
- c Fluoxetine (2 marks)

Question 6

The doctor prescribed JD an opioid analgesic to help him manage his pain after a recent hip replacement surgery.

- a Describe the mechanisms of action of opioid analgesics in general and explain how they stop pain transmission.

(4 marks)

- b JD developed an addiction to this opioid analgesic after a prolonged use. Suggest an agent that is currently used to wean off (stopping) opioid addiction and explain how it works.

(3 marks)

- c JD was presented to the hospital due to an overdose of his opioid analgesic. List the typical signs and symptoms of opioid overdose, and the IV agent used to reverse this poisoning.

(3 marks)

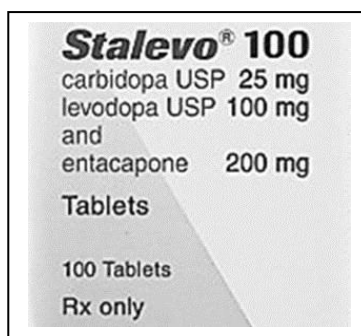
Question 7 (multiple topics)

- a Explain how the physicochemical properties of inhaled general anaesthetics can determine their speeds of onset of action and their potencies.

(5 marks)

- b Describe how ethanol is eliminated from the body (drawing a flow diagram without an explanatory note is NOT an acceptable answer). Include in your answer the enzymes involved and the rate-limiting factor.

(5 marks)



Question 8

- a Discuss the basis for the use of levodopa to alleviate signs and symptoms associated with Parkinson's disease. (4 marks)
- b What are the roles of carbidopa and entacapone in this preparation? In your answer, describe their mechanisms of action and explain the reasons for their inclusion. (6 marks)

Question 9

- a Describe the mechanism of action of benzodiazepines. (4 marks)
- b Do all drugs that bind to the benzodiazepine binding sites produce the same effects? Explain your answer and give examples. (3 marks)
- c In comparison with older sedative-hypnotic drugs such as the barbiturates, what is the clinical consequence of benzodiazepine overdose? Explain the difference with reference to the mechanisms of action of barbiturates and benzodiazepines. (3 marks)

Question 10

Answer the following questions asked by a young woman who has been prescribed a combined oral contraceptive pills for the first time.

- a What are in these pills and how do they work? (5 marks)
- b What side effects might I experience? (3 marks)
- c How do I take them and what happens if I miss a dose? (2 marks)

End of Section B

End of Exam Paper